

ABSTRACT OF THE INVENTION

A spectrally encoded endoscopic probe having high resolution and small diameter comprising at least one flexible optical fiber; an energy source; a grating through which said energy is transmitted such that the energy spectrum is dispersed; a lens for focusing

5 the dispersed energy spectrum onto a sample such that the impingement spot for each wavelength is a separate position on the sample, the wavelength spectrum defining a wavelength encoded axis; means for mechanically scanning the sample with focused energy in a direction perpendicular to the wavelength encoded axis; a means for receiving energy reflected from the sample; and, a means for detecting the received reflected
10 energy. The probe grating and lens delivers a beam of multi-spectral light having spectral components extending in one dimension across a target region and which is moved to scan in another direction. The reflected spectrum is measured to provide two dimensional imaging of the region.

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